

What is claimed is:

1. An apparatus for providing a streaming service, comprising:  
a header object having basic information about a file and information for  
an application service;  
a data object synchronizing multimedia data with temporal information and  
storing it; and  
a key index object storing an offset and temporal information of a video  
block having a key frame in video blocks as a basis on a time axis for random  
access and reproduction.
2. The apparatus for providing a streaming service according to claim  
1, wherein the header object includes:  
a descriptor for classification or index of a file;  
a FILEINFO (file information) storing overall information of the file;  
an AUDIOINFO (audio information) storing information about audio media;  
a VIDEOINFO (video information) storing information about video media in  
video blocks of the data object;  
an OFFSETINFO (offset information) defining a position of the data object  
and a position of the key index object in the file; and  
a CLIPINFO (additional information) providing additional information to a  
user.
3. The apparatus for providing a streaming service according to claim  
2, wherein the header object further includes a reserved field.

4. The apparatus for providing a streaming service according to claim 3, wherein the reserved field is a TEXTINFO (text information) adding a caption function to a moving picture.

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5. The apparatus for providing a streaming service according to claim 4, wherein the TEXTINFO includes:

- a font field indicating a font of text;
- a color field indicating a color of text;
- 10 a size field indicating a size of text; and
- a reserved field for future applications.

6. The apparatus for providing a streaming service according to claim 2, wherein the descriptor includes:

- 15 a length field indicating a total size of the header object as a byte unit; and
- an object type field indicating a kind of the object.

7. The apparatus for providing a streaming service according to claim 2, wherein the FILEINFO includes:

- 20 a version field indicating version information a file format;
- an ID field indicating a file generation end time with a stream ID;
- a file length field indicating the total length of the file;
- a playtime field indicating the total reproduction time;
- an encoding rate field indicating an encoding rate defined by a user;
- 25 a video number field indicating the number of encoded video frames in the

data object of the file;

an I-frame number field indicating the number of I-frames in the encoded video frames in the data object of the file;

a P-frame number field indicating the number of P-frames in the encoded video frames in the data object of the file;

an audio number field indicating the number of encoded audio blocks in the data object of the file;

a biggest video frame field indicating a size of the biggest video frame in the encoded video frames in the data object of the file; and

a reserved field reserved for future applications.

8. The apparatus for providing a streaming service according to claim 2, wherein the AUDIOINFO includes:

an audio codec type field indicating a kind of audio codec having a generated audio block in the data object;

an audio rate field indicating an audio encoding rate; and

an reserved field reserved for future applications.

9. The apparatus for providing a streaming service according to claim 2, the VIDEOINFO includes:

a video codec type field indicating a kind of video codec having a generated video block in the data object;

a video rate field indicating a video encoding rate;

a frame rate field indicating the number of encoded video frames of the video frame;

a key frame rate field indicating the number of insertion frames of an I-frame;

a screen size field indicating a size of the encoded screen; and

a reserved field reserved for future applications.

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10. The apparatus for providing a streaming service according to claim 2, wherein the OFFSETINFO includes:

a data offset field indicating a position of the data object;

a key index offset field indicating a position of the key index object as an offset value in the file; and

a reserved field reserved for future applications.

11. The apparatus for providing a streaming service according to claim 2, wherein the CLIPINFO includes:

a title field indicating a title of the file;

an author field indicating a creator of the file;

a URL field indicating a URL related to the file; and

a description field providing general explanation about the file.

12. The apparatus for providing a streaming service according to claim 1, wherein the header object further includes a reserved field used in upgrade version or change.

13. The apparatus for providing a streaming service according to claim 1, wherein the reserved field is a TEXTINFO (text information) adding a caption

function to a moving picture.

14. The apparatus for providing a streaming service according to claim 1, wherein the data object transmits each media simultaneously or separately  
5 according to data media type.

15. The apparatus for providing a streaming service according to claim 1, wherein the data object includes:

10 a video block having information about video in multimedia data; and  
an audio block having information about audio in multimedia data.

16. The apparatus for providing a streaming service according to claim 15, wherein the data object further includes a media block for an additional service.

15 17. The apparatus for providing a streaming service according to claim 15, wherein the video block has a video payload (video storage) storing video encoding frames.

18. The apparatus for providing a streaming service according to claim  
20 15, wherein the audio block has one audio storing payload (audio storage) or a plurality of audio payloads storing audio encoding frames.

19. The apparatus for providing a streaming service according to claim 15, wherein the video block includes:  
25 a descriptor for classification or index of video block information;

a TSINFO (time stamp information) proceeding synchronization by defining a difference value between an initial time stamp in encoding; and  
a video payload (storage) storing actual encoded video data.

5           20.     The apparatus for providing a streaming service according to claim 19, wherein the descriptor includes:

a length field indicating a size of the video payload as a byte unit; and  
an object type field indicating a kind of the object.

10           21.     The apparatus for providing a streaming service according to claim 19, wherein the TSINFO includes:

a time stamp field indicating differences between an early time stamp; and  
a reserved field reserved for future applications.

15           22.     The apparatus for providing a streaming service according to claim 1, wherein the key index object includes:

a descriptor for classification or index of information; and  
a KEYINFO (key information) storing information about each key frame of video frames.

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23.     The apparatus for providing a streaming service according to claim 22, wherein the descriptor includes:

a length field indicating the total size of the KEYINFO as a byte unit; and  
an object type field indicating a kind of the object.

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24. The apparatus for providing a streaming service according to claim 22, wherein the KEYINFO includes:

- an offset field indicating an offset value of serial key frame; and
  - a time stamp field comparing a time stamp value of a pertinent key frame
- 5 with a time stamp value of the data object.

25. In an apparatus for storing data, An apparatus for providing a streaming service, comprising:

- a header object having basic information about a file and information for
- 10 an application service;
- a data object synchronizing multimedia data with temporal information and storing it; and
  - a key index object storing an offset and temporal information of a video block having a key frame in video blocks as a basis on a time axis for random
- 15 access and reproduction.

26. A method for providing a streaming service, comprising:

- a client/server connecting process for receiving header object information from a server and transmitting a transmission instruction to the server by a client;
- 20 a transmission mode selecting process for selecting a transmission mode by receiving the transmission instruction and reading each block of data object with a memory by the server;
- a packet transmitting process for packeting each block into a moving picture stream and transmitting it to the client by the server;
- 25 a depacketing process for receiving the moving picture stream packet and

obtaining a stream by depacketing the received moving picture stream packet by the client; and

a moving picture reproducing process for reproducing the multimedia data by synchronizing the stream by the client.

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27. The method for providing the streaming service according to claim 26, wherein the server is in an audio transmission mode and transmits only audio when a network bandwidth is low, the server is in a video transmission mode and transmits only video when the network bandwidth is intermediate, the server is in a video/audio simultaneous transmission mode and transmits both video and audio when the bandwidth is sufficiently high in the transmission mode selecting process.

28. The method for providing the streaming service according to claim 27, wherein a media type transmission mode is added besides the audio or video transmission mode.

29. The method for providing the streaming service according to claim 26, wherein the client can reproduce a moving picture in real time by obtaining a time stamp of the moving picture in a TSINFO (time stamp information) of a video block and an audio block and synchronizing the video block and the audio block placed at the same time according to the time stamp of the moving picture in the moving picture reproducing process.

30. The method for providing the streaming service according to claim 26, wherein the client can reproduce a certain point of the moving picture by



- transmitting a time stamp of a moving picture to be reproduced to the server through a set position instruction, obtaining a time stamp of the moving picture and an offset value matched to the time stamp of the moving picture in a KEYINFO (key frame information) of a key index object, reading a video block and an audio
- 5 block at the offset position and receiving it from the server receiving the set position instruction.